

OPA

**RICHARDS  
CORPORATION**

1658

55 East Center Pleasant Grove, UT 84062 • (801) 785-2500 • Toll free: (800) 453-1210 • Fax: (801) 785-2521

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Thank you

Date: 9-9-94

Please deliver this message to:

Name: HAYS GREISWALDCompany: EPATelephone Number: 303-294-7081Fax Number: 303-294-7168

From:

Name: Robert Richards

Richards Corporation  
55 East Center  
Pleasant Grove, UT 84062

Fax Number: (801)785-2521

Telephone Number: (801)785-2500

We are transmitting 5 pages, including this cover sheet. If the transmission is not complete, please call: (801) 785-2500

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**RICHARDS  
LABORATORIES**INC  
RICHARDS INDUSTRIAL MICROBIOLOGY LABORATORY • 55 East Center • Pleasant Grove, Utah 84062 • (801) 785-2500 • Salt Lake: (801) 355-5579 • Watts: (800) 453-1210**OPA****Summary of Questar's UST Pilot**

The purpose of this study was to determine if the bacteria which Richards Industrial Microbiology Laboratory has developed can be used to break down the hydrocarbon contaminated water in the 12,000 gallon UST on Questar Pipelines property located in Vernal, Utah.

In connection with the initial investigation of the suspected release, Questar drained the UST and began evaluations. To confirm the tanks integrity, a tightness test was performed, to do this the tank had to be full. Richards pumped water from a ground water production well which was contaminated with free product, into the UST to prepare for the tightness test. The test was performed and the tank tested tight.

At the request of Questar Pipeline, Richards was asked to perform the remediation of the UST as a pilot study to show the usefulness of bioremediation.

The UST was sampled and found to have five inches of gas floating on the top of the water. Richards installed a skimmer pump into the UST and let it pump until 8:00 a.m. on March 11, 1994 removing about 25 gallons of free product. There was a small amount of free product left in the tank, exactly how much is not known. The UST was then sampled again for the beginning sample. An air line with an eight foot steel pipe with 1/16 inch holes drilled in it was lowered to the bottom of the UST and air from Questar's shop was pumped into the tank for two hours before the bacteria were introduced.

At 10:00 a.m. on March 11, 1994 the bacteria and the necessary nutrients were added to the UST. The UST was sampled at 3:00 on March 21, 1994--a total 199 hours with the supply of air and nutrients (8-24 hour days). The laboratory results below show the reduction of the BTEX and TPH hydrocarbons in the UST.

The water temperature at the beginning of the test was 53° F and was at 49° at the ending time. The drop in temperature was due to cold air being pumped into the water.

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**RICHARDS  
LABORATORIES**

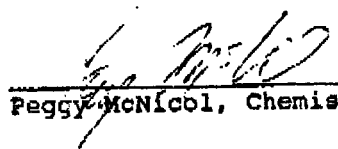
55 East Center • Pleasant Grove, Utah 84062 • (801) 785-2500 • Salt Lake: (801) 355-5578 • Watts: (800) 453-1210 • Fax: (801) 785-2521

**Gas Chromatography Method 602**Client: QuestarSample ID/Date: Vernal Site, UST 1 3/11/94Matrix/Log #: Water 1675G Analyzed: 602 3/18/94 P.M.

Analyte	Concentration in PPB	Detection Limit in PPB
Benzene	33,690	<5
Toluene	70,305	<5
Ethylbenzene	6,876	<5
Total Xylene	30,187	<5
Napthalene	--	--
Total BTEX	141,058	<5
TPH		

Comments: 1,000 times dilution made to achieve above results.Client: QuestarSample ID/Date: Vernal Site, UST #1 3/21/94Matrix/Log #: Water 1685G Analyzed: 602 3/22/94 P.M.

Analyte	Concentration in PPB	Detection Limit in PPB
Benzene	ND	<5
Toluene	43.21	<5
Ethylbenzene	ND	<5
Total Xylene	183.04	<5
Napthalene	--	--
Total BTEX	226.25	<5
TPH	1142	

Comments: A 10x dilution was performed on sample to achieve above results.
  
 Peggy McNicol, Chemist

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## Summary of Questar's UST Pilot

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Peggy McNicol, Chemist

## CHAIN OF CUSTODY REPORT

427

RICHARDS INDUSTRIAL MICROBIOLOGY, INC.  
 55 EAST CENTER PLEASANT GROVE, UT 84062  
 1-800-453-1210 1-801-785-2500

CUSTOMER NAME: <i>Questar (UST)</i>						NUMBER OF CONTAINERS	<i>B T L E N</i>	<i>T P H</i>								REMARKS
SAMPLER: <i>Robert Richards</i>																
SAMPLE NUMBER	DATE	TIME	C O M P	G R A B	LOCATION											
<i>1</i>	<i>3/14/94</i>	<i>8:00</i>		<i>✓</i>	<i>UST Before Bact</i>	<i>2</i>										<i>- High GMS -</i>
SAMPLES RELINQUISHED BY:			DATE	TIME	SAMPLES RECEIVED BY:			DATE	TIME	REASON FOR TRANSFER						
<i>Robert Richards</i>			<i>3/14/94</i>	<i>1:50</i>	<i>James M. Myasak</i>			<i>3/14/94</i>	<i>1:50</i>	<i>Receiving</i>						



## 428

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